

## Willingness and preference for using telehealth services among patients with depression

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### ABSTRACT

**Background:** Depression is a common mental disorder for which telehealth services can provide support. The willingness to use these solutions among patients is among factors related to the use of such solutions. The study aim was to investigate the willingness and preference of patients with depression for using telehealth solutions for depression. **Materials and Methods:** We conducted a cross-sectional study between beginning of April and end of August 2019. We administered a questionnaire to 146 people with depression. The sampling method in this study was non-probability. We assessed the Patients' willingness and preference for using telehealth services for depression based on a researcher-constructed questionnaire. **Results:** About 87.67% of the participants were women. The average age of participants was 29.62. Sixty participants (41.09%) reported using telehealth services for their mental health in the past. They highlighted reasons such as lack of enough time, not being able to afford the cost of a face-to-face consultation, fear of disclosure of the information about their face-to-face visit, lack of consent by a family member for a face-to-face visit, the likelihood of being seen by others in the health setting and possibility of stigma, and distrust of consultant for their preference. More than 58 % of the participants showed high and very high willingness to use telehealth consultations. Preference of patients with depression toward the functionality of mobile health (m-health) solutions for depression was the behavioral activation/behavioral goals monitoring (77.39%), followed by the communication with psychologists and mental health experts (50.68%) and monitoring changes in mood or behavior (36.30%). **Conclusion:** Given the relatively high willingness of patients with depression to functionalities for behavioral activation and communication with the therapists, it appears inevitable to develop a mobile app for meeting the patients' demands.

**Keywords:** willingness, preference, depression, telehealth, teleconsultation, functionality

### 1. INTRODUCTION

Depression imposes severe health and financial burdens to the patients and the public (Simon, 2003). It affects over 120 million people worldwide (Lépine



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& Briley, 2011). People with depression are reluctant to seek professional help. Evidence shows that over half of people with depression in the community do not consult a health professional (Barney et al., 2006). Moreover, many patients do not receive appropriate treatment because of the time and cost involved (Simon et al., 2007, Chisholm et al., 2016), and mental health care organizations often cannot provide the care they need. Fear of being labeled as a mental illness (stigma) (Roeloffs et al., 2003) is also likely to be one of the barriers to using face to face psychiatric services (Saraceno et al., 2007). These facts are even more touching in low and middle-income countries due to fragmented health systems, low availability of mental health specialists, devastating poverty among the population as well as social disenfranchisement of individuals' mental wellbeing (Naslund et al., 2017).

Currently, modern care organizations are taking advantage of telehealth and telemedicine technologies enabled by the internet (Mariani & Pêgo-Fernandes, 2012). In recent years, the delivery of remote mental health interventions has occurred through different cost-effective and appropriate approaches such as teleconferencing, Internet-based interventions, portals, social networks, and telephones (Naslund et al., 2017). The unprecedented growth in mobile telecommunications and internet access across many low-income and middle-income countries might present new opportunities to reach, support, and treat individuals living with mental disorders (Jones et al., 2014). E-health (Electronic Health) provides tools, processes, and communications to support electronic health care practice removing the barriers of space and time between health care providers and patients (Martínez-Pérez et al., 2013). These tools can be used for capturing, manipulation, classification, and transmission of health-related data as well as delivering non-face-to-face health services.

To date, there is little research on the willingness and preference of those with depression to use non-face-to-face health services, including mobile health services. This study aimed to explore willingness and preference for using non-face-to-face services among those with depression.

## 2. MATERIALS AND METHODS

### Participants

We conducted a cross-sectional study between beginning of April and end of August 2019. A convenient sample of 146 participants (18 males and 128 female) answered a survey for over three months. The participants were eligible to be included in this survey only if they had been diagnosed with depression by a psychiatrist and referred to community health centers in a city in west Azerbaijan province (located in the north west of Iran) for managing their condition and had a smartphone and had routine use of the internet. We excluded cases from the study if they had a severe depression. The method of sampling was convenience sampling.

### Study questions

A survey questionnaire was administered to the participants in person by one of the researchers (BA). This questionnaire consisted of the following sections: patients' demographic information, usage of tele-health services by patients in the past, approaches used by patients for tele-health, patient willingness to get tele-mental health services using mobile and patient preferences for functionalities of m-health application. Patients expressed their willingness for tele-health services using Likert scales anchored by 5=very high willingness 4=high willingness 3=moderate willingness 2=low willingness 1= very low willingness 0=undecided. For questions related to the preference, the participants were presented with different choices. Moreover they were given an option to write their own preference if it was not listed among the options.

The researchers constructed the survey questions. They first reviewed the prior surveys in the willingness and preference of different groups of patients about online health and m-health solutions. Then they design the survey questions related to various objectives of the study. After preparing the preliminary draft of the questionnaire, the researchers administered it to an expert panel (n=15) consisting of psychologists, psychiatrists, and experts in medical informatics discipline to confirm its content validity. The content validity index (CVI) was computed for the questionnaire and the mean validity index of the final questionnaire content was 0.97. Cronbach's alpha coefficient of 0.78 was obtained for the questionnaire. Finally descriptive statistics were used for data analysis.

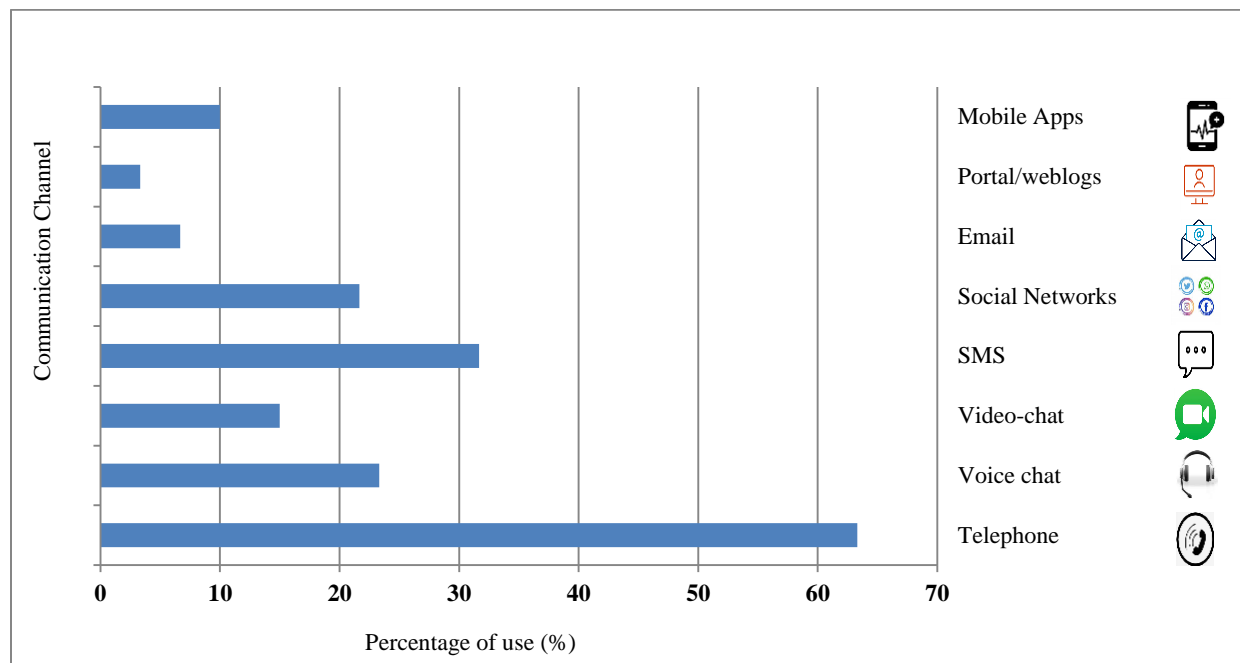
## 3. RESULTS

### Basic Characteristics

The response rate was 82.22% in this survey. Age of participants was 29.62 (SD=5.56) on average. 41.8% of the patients aged between 26 to 30. Half of the participants were house wives. Majority of the participants' education level was undergraduate (32.88%) followed by high school (30.82%) and middle school level (21.23%). About 33.56 % of the participants reported the usage of their mobile phone for less than an hour a day while about 32.2 % of them reported the use for 1-3 hours a day. Cell phone usage

among the participants used their smartphones for 2 hours 39 minutes a day and 26.7 % reported 3-5 hours of the usage. Only 7.5 % of the informants had mobile usage more than 5 hours a day. About 41.1 % of the participants had experience of using non-face-to-face services for depression.

Figure 1 shows 63.33% of these participants (n=38) had an experience of receiving the services using phone calls while 31.66 % (n=19) and 21.66 % (n=13) of them had deployed SMS (short text messages) and social media respectively. Only 10 % of those with experience of using non-face-to-face services mentioned experience of using the mobile app for non-face-to-face health services.



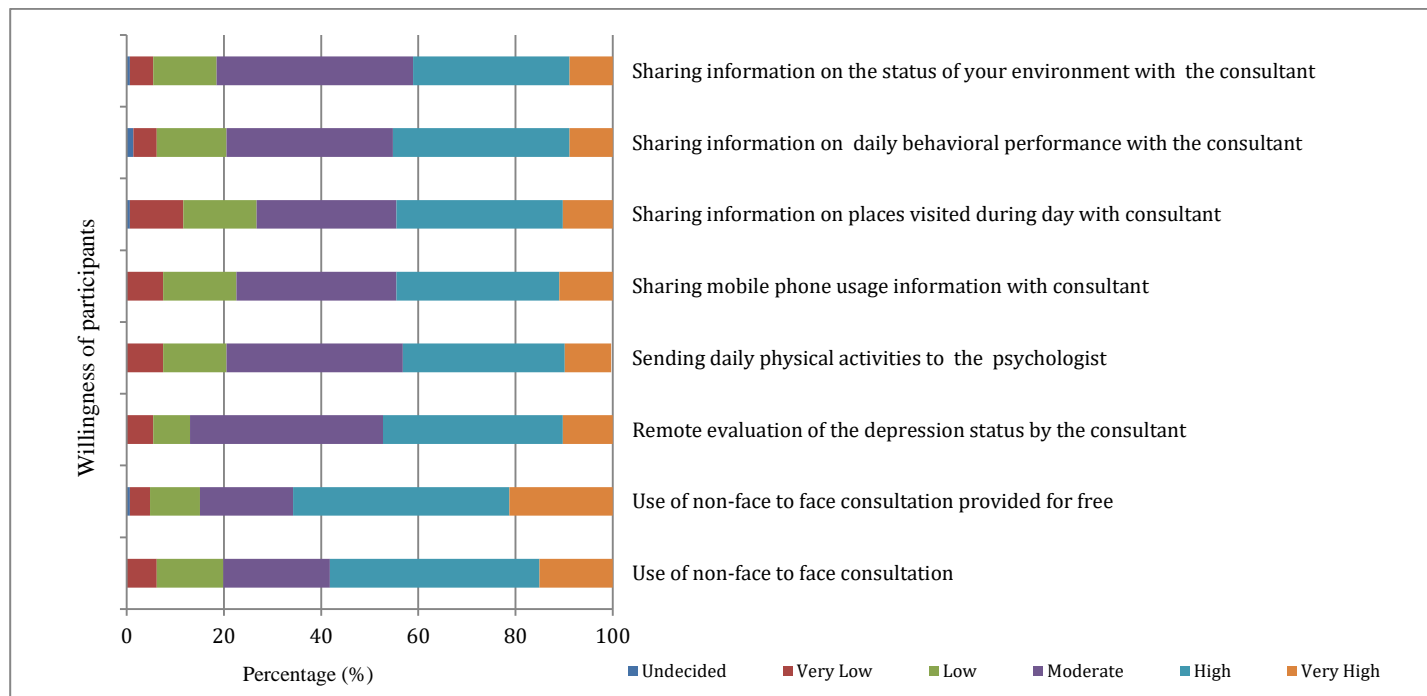
**Figure 1** Communication channel used by the participants to receive non-face-to face services in the past and reasons of use

The participants had used non-face- to face services in the past for the following purposes: booking an appointment (40%), consulting with their health care provider about their condition (35%), asking their questions about their medications (16.66%), reporting daily performance about their conditions to the consultant (11.66), and getting daily text messages about depression and its related managing strategies (10%). Those with experience of using non-face-to-face health services for their condition expressed different reasons for not using the face-to-face services. Table 1 shows the reasons in detail.

**Table 1** Reasons for not using face-to-face telehealth services by the participants

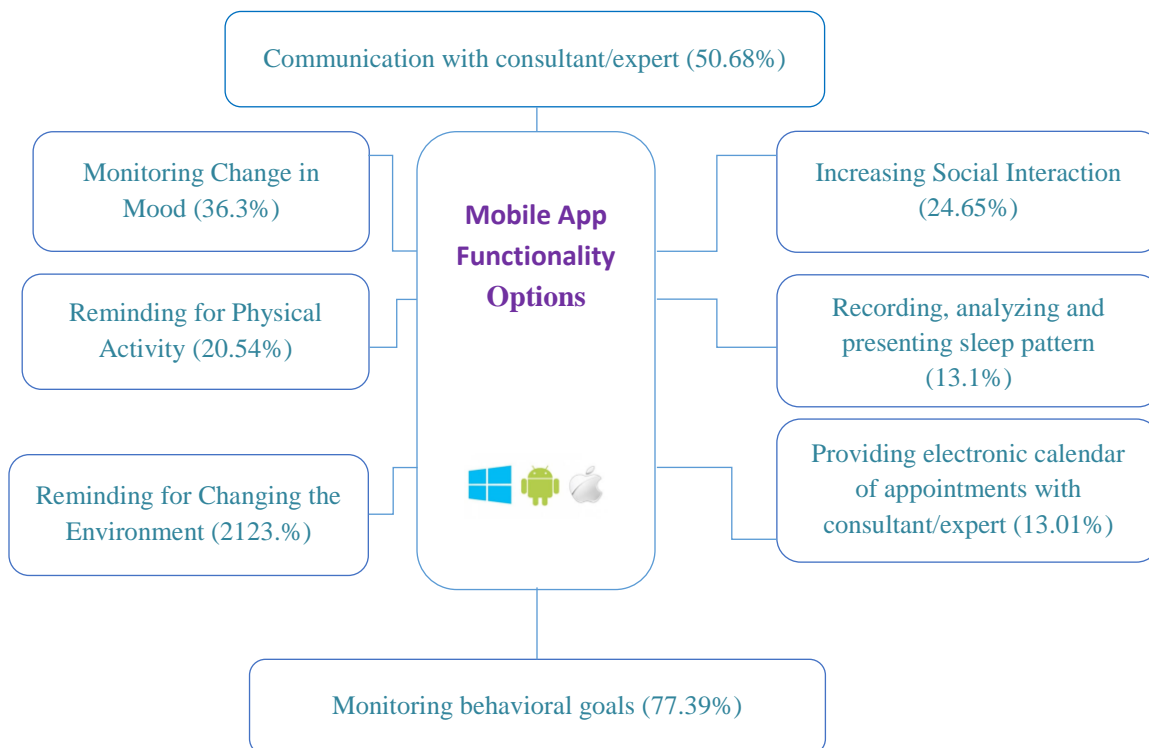
Reasons	Percentage (%)
Likelihood of being seen by family others in the consultation center and possibility of stigma	13.69
Lack of enough time for face-to-face visit	25.34
Lack of consent by a family member for face-to-face consultation	14.38
Distrust of consultant	11.64
Fear of disclosure of the information about the reason of encounter with the consultant	15.75
Not able to afford the cost of the face to face consultation	11.66

When participants were asked about their willingness for using non-face-to-face health services, they showed a different range of willingness toward various purposes behind such use. Figure 2 shows the details.



**Figure 2** Willingness of the participants for using non-face-to-face and m-health solutions for their depression

When participants were asked about their preference for functionality of potential m-health solutions for their condition, the functionality of monitoring behavioral goals (77.39) and communication with consultant or mental health experts were ranked in the first and second positions. Figure 3 presents the details.



**Figure 3** Preference of patients with depression toward functionality of m-health solution for their condition

#### 4. DISCUSSION

This research examined the willingness and preference of those with depression about non-face-to-face services for their condition. Findings on the gender of our participants revealed that the females suffering from depression are more likely to contact health centers as the percentage of their participation was much higher compared with the males. Evidence shows the reluctance of men with depression to seek help in this regard (Emslie et al., 2006; Ellis, 2018; Sagar-Ouriaghli et al., 2019). Our results suggest that free provision of non-face to face mental services can attract some patients with depression to utilize such services. Behind turning some patients to teleconsultation was their concern about privacy of face-to-face consultation. This is rather surprising since telehealth systems can put privacy at risk as well if not properly provided. It appears these people consider the privacy of non-face-to-face consultation much higher than face-to-face one. However, it should be noted that privacy and security risks of the telehealth system are also among the key factors influencing patients' trust (Hale & Kvedar, 2014).

More than half of those who had willingness to utilize non-face-to-face services, preferred to use social media for receiving services. Social network media has become popular for health care purposes and has evolved to play a role in engaging and empowering patients in the health care domain (Househ et al., 2014, Alshakhs & Alanzi, 2018, Sabr et al., 2020). Telephone was also among the next preferred channel by the participants to receive the non-face-to-face services. This may be attributed to the fact that patients with depression need to talk and be listened to without fear of judgment. Talks not only help to treat depression but also prevent one from getting depressed (Arun, 2017). Surprisingly a low percentage of the participants preferred the use of video conferencing. This can be resulted from artificiality, discomfort, and social anxiety associated with this approach (Renn et al., 2019).

Another interesting finding is the majority of patients are not eager to share information about the places visited during a day, daily physical activity, daily behavioral performance, and status of the environment with consultants. This is in line with the findings from a study that reported some participants found obtaining GPS coordinates as a breach of their privacy and they were not sure about the purpose of collecting such information (Boonstra et al., 2018). Less than half of the patients had no experience of using non-face-to-face services. Some patients highlighted a lack of awareness of non-face-to-face services. A study by Reyes et al., (2018) has cited a lack of awareness among American Asian women as one of the main barriers to conducting e-mental health services. Another study has highlighted the lack of experience of many therapists with mobile and web-based interventions (Schuster et al., 2019).

A significant percentage of patients in our survey were willing to have their daily goals monitored by consultants or mental health experts. This is of great importance as depression can change people's daily lives. Behavioral activation is one of the therapies aimed at supporting individuals in engaging in activities that will increase the positive reinforcement an individual gets from their environment (Tilden et al., 2020). It appears that addressing the issue of behavioral activation through apps can provide a new approach to monitoring status of patients with depression. Psychologists use behavioral activation to treat depression (Martin & Oliver, 2019). The majority of patients were in favor of including functionality for behavioral activation therapy. Behavioral Activation (BA) is now considered an accepted evidence-based first-line treatment for depression (National Collaborating Centre for Mental Health, 2010). Almost half of the patients preferred to have the functionality of communication with the consultant in the mobile app. Those with depression want to stay in touch with their psychologists and consult with their psychologists about their problems. In a study by Place et al., (2020) 53 % of the patients with depression felt that the use of the mobile app for monitoring their condition improved their communication with clinicians. This may imply the existing gap in communication of patients with psychologists (Riding-Malon and Werth, 2014). Considering the appropriate functionality in the mobile app may help to bridge this gap.

Our results revealed that some patients are eager to have their behavioral, environmental, and behavioral information monitored by psychologists through the app. Mobile applications can deploy various embedded sensors of smartphones (mobile sensing) and can measure patients' surroundings as well as their behavior (Lee and Lee, 2015). Less than half of the patients in our survey reported that they are likely or very likely to share data collected by the mobile sensing about their environment/surrounding (sound, light, etc.) with their psychologist via mobiles. Results of a similar study have reported that 80 % of the patients are likely to share the data captured by the sensors with the clinicians (Place et al., 2020).

#### 5. CONCLUSION

This research revealed the willingness and preferences of patients with depression to non-face-to-face services. The participants' willingness to functionalities for behavioral activation and communication with the therapists, developing a mobile app for meeting the patients' demands appears inevitable. A Conservative attitude to sharing data by a group of participants reflects the lack of

trust in online platforms. Such mistrust may also stem from a lack of formal approval and accreditation process behind such platforms as well as the lack of regulations protecting the user of online platforms like mobile apps.

### Limitations

Sample size of the participants was relatively small in this study. In addition, male participants were lower compared with female participants.

### Author's contribution

All authors conceptualized, designed, and carried out the study, collected and analyzed data. All authors read and agreed to the final manuscript.

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### Conflict of interest

The authors declare that there are no conflicts of interests.

### Informed consent

Informed consent was obtained from all participants. The local university institutional review board approved the study. Participants were free to leave the study whenever they wanted.

### Ethical approval

Ethical approval for conducting this study has been obtained from the Research Ethics Board at Tabriz University of medical science, Tabriz, Iran (No: IR. TBZMED.REC.1397.561).

### Data availability

Data included in the study are available from the corresponding author on request.

## REFERENCES AND NOTES

1. Alshakhs F, Alanzi T. The evolving role of social media in health-care delivery: measuring the perception of health-care professionals in Eastern Saudi Arabia. *J Multidiscip Healthc* 2018; 11: 473-479.
2. Barney L, Griffiths K, Jorm A, Christensen H. Stigma about depression and its impact on help-seeking intentions. *Aust N Z J Psychiatr* 2006; 40(1): 51-54.
3. Boonstra TW, Nicholas J, Wong QL, Shaw FS, Townsend and H. Christensen. Using mobile phone sensor technology for mental health research: integrated analysis to identify hidden challenges and potential solutions. *J Med Internet Res* 2018; 20(7): e10131.
4. Chisholm D, Sweeny K, Sheehan P, Rasmussen B, Smit F, Cuijpers P, Saxena S. Scaling-up treatment of depression and anxiety: a global return on investment analysis. *Lancet Psychiatry* 2016; 3.
5. Ellis KA. Identifying and addressing barriers to men seeking help for depression. *Br J Ment Health Nurs* 2018; 7(3): 130-136.
6. Emslie C, Ridge D, Ziebland S, Hunt K. Men's accounts of depression: reconstructing or resisting hegemonic masculinity. *Soc Sci Med* 2006; 62(9): 2246-2257.
7. Hale TM, Kvedar JC. Privacy and security concerns in telehealth. *AMA J Ethics* 2014; 16(12): 981-985.
8. Househ M, Borycki E, Kushniruk A. Empowering patients through social media: the benefits and challenges. *Health Informatics J* 2014; 20(1): 50-58.
9. Jones S, Patel A, Saxena S, Radcliffe N, Al-Marri S, Darzi A. How Google's 'Ten Things We Know to Be True' could guide the development of mental health mobile apps. *Health Aff* 2014; 33: 1603-1611.
10. Kessler RC, Berglund P, Demler O, Jin R, Koretz D, Merikangas KR, Rush AJ, Walters EE, Wang PS. The epidemiology of major depressive disorder results from the National Comorbidity Survey Replication (NCS-R). *J Am Med Assoc* 2003; 289 (23): 3095-3105.
11. Lee WH, Lee RB. Multi-sensor authentication to improve smartphone security. 2015 International Conference on



- Information Systems Security and Privacy (ICISSP), IEEE 2015.
12. Lépine JP, Briley M. The increasing burden of depression. *Neuropsychiatr Dis Treat* 2011; 7(Suppl 1): 3-7.
13. Mariani A, Pêgo-Fernandes P. Telemedicine: A technological revolution. *Sao Paulo Med J* 2012; 130: 277-278.
14. Martin F, Oliver T. Behavioral activation for children and adolescents: a systematic review of progress and promise. *Eur Child and Adolesc Psychiatry* 2019; 28(4): 427-441.
15. Martínez-Pérez B, De la Torre-Díez I, Lopez-Coronado M. Mobile Health Applications for the Most Prevalent Conditions by the World Health Organization: Review and Analysis. *J Med Internet Res* 2013; 15: e120.
16. Naslund J, Aschbrenner K, Araya R, Marsch L, Unützer J, Patel A, Bartels S. Digital technology for treating and preventing mental disorders in low-income and middle-income countries: A narrative review of the literature. *Lancet Psychiatry* 2017; 4(6):486-500.
17. National Collaborating Centre for Mental Health. Depression: the treatment and management of depression in adults (updated edition). British Psychological Society 2010.
18. Place S, Blanch-Hartigan D, Smith V, Erb J, Marci CD, Ahern DK. Effect of a Mobile monitoring system vs usual care on depression symptoms and psychological health: A Randomized Clinical Trial. *JAMA Netw Open* 2020; 3(1): e1919403-e1919403.
19. Renn BN, Hoeft TF, Lee HS, Bauer AM, Arian PA. Preference for in-person psychotherapy versus digital psychotherapy options for depression: survey of adults in the US. *NPJ Digl Med* 2019; 2(1): 1-7.
20. Reyes AT, Constantino RE, Arenas RA, Bombard JN, Acupan AR. Exploring challenges in conducting e-mental health research among Asian American women. *Asian Pac Isl Nurs J* 2018; 3(4): 139-153.
21. Riding-Malon R, Werth JL. Psychological practice in rural settings: at the cutting edge. *Prof Psychol Res and Pr* 2014; 45(2): 85-91.
22. Roeloffs C, Sherbourne C, Unützer J, Fink A, Tang L, Wells KB. Stigma and depression among primary care patients. *Gen Hos Psychiatry* 2003; 25(5): 311-315.
23. Sabr Y. Consumer-Oriented Evaluation of the Clinical Service Provided in Diabetic Health Education: A Prospective Observational Study. *Med Sci* 2020; 24(105): 3623-3638.
24. Sagar-Ouriaghli I, Godfrey E, Bridge L, Meade L, Brown JS. Improving mental health service utilization among men: a systematic review and synthesis of behavior change techniques within interventions targeting help-seeking. *Am J Men's Health* 2019; 13(3): 1557988319857009.
25. Saraceno B, Ommeren M, Batniji R, Cohen A, Gureje O, John M, Sridhar D, Underhill C. Barriers to improvement of mental health services in low-income and middle-income countries. *Lancet* 2007; 370(9593): 1164-1174.
26. Schuster R, Kalthoff I, Walther A, Köhldorfer L, Partinger E, Berger T, Laireiter AR. Effects, adherence, and therapists' perceptions of web-and mobile-supported group therapy for depression: mixed-methods study. *J Med Internet Res* 2019; 21(5): e11860.
27. Simon G, Katon W, Lin E, Rutter C, Manning W, Von Korff M, Ciechanowski P, Ludman E, Young B. Cost-effectiveness of systematic depression treatment among people with diabetes mellitus. *Arch Gen Psychiatry* 2007; 64(1): 65-72.
28. Simon GE. Social and economic burden of mood disorders. *Biol Psychiatry* 2003; 54(3): 208-215.
29. Tilden C, Bond MH, Stephens TN, Lyckberg T, Muñoz RF, Bunge EL. Effect of three types of activities on improving mood and enjoyment in a brief online depression study. *Depress Res and Treat* 2020; 1387832.